Operators and Case : Explaining A-Bar Agreement

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Abstract

In this paper I offer an analysis of some peculiar cases of A-bar agreement that are attested in a number of languages including Hungarian, Chamorro, a dialect of English, Innu-aimûn, and Kinada, in the context of the minimalist framework outlined by Chomsky (2000, 2001, and later). I show that these cases can be given a unified account if operators bear two Case features : one is a Case relevant to the A-system and the other a Case that is associated with the A-bar system (the Split Case Feature Hypothesis). The proposed analysis allows me to view A-agreement and A-bar agreement as two sides of the same coin.

Keywords : A-bar agreement, the Split Case Feature Hypothesis, operators, Multiple Spell-out

1. Introduction

This paper attempts to provide a principled explanation of some peculiar cases of A-bar agreement from the perspective of the Minimalist Program. It will be shown that these cases can be given a unified account if operators bear two Case features : one is a Case relevant to the A-system and the other a Case that is associated with the A-bar system.

The structure of the paper is as follows. In section 2, I discuss the A-bar

agreement phenomenon that is attested in a number of languages including Hungarian, Chamorro, a dialect of English, Innu-aimûn, and Kinada, in the context of the minimalist framework outlined by Chomsky (2000, 2001, and later). In section 3, I briefly review Branigan and Machenzie's (2002) recent minimalist analysis of A-bar agreement, and show that one important property of A-bar agreement is not derived from this analysis. After presenting the theoretical background assumed in this study in section 4, in section 5 I present a different theory of A-bar agreement, which assumes that there is a second Case involved in an A-bar operation. In section 6 I provide further evidence in support of our theory of Case. In section 7 I briefly discuss what Case feature combinations are licensed in the grammar, before a conclusion in Section 8.

2. A-bar agreement

In this section I introduce data that seem to fall under a class of A-bar agreement phenomena from a minimalist perspective. Following Chomsky (2000, 2001), I assume that Case feature-checking is a reflex purely of agreement. Hence, the examples of A-bar agreement focused on here come not only from languages such as Innu-Aimûn and Kinande, in which verbs agree with a DP in Spec, CP/Spec, vP, but also from languages such as Hungarian, in which Case-checking takes place between verbs and a DP in Spec, CP.

2.1. *Wh*-Case marking in Hungarian

In Hungarian, the subject of the subordinate clause can be marked accusative Case when it is a long-distance extracted *wh*-word. This phenomenon is illustrated by the following examples.

(1) a. Kiket$_i$ mondtad hogy szeretnél ha eljönnének

who-ACC you-said that you-would-like if come-COND-3PL
'Who did you say that you would like it if they came ?'
(Kiss, 1985, as cited in Bejar and Massam, 1999)

b. Kit$_i$ javasolsz, [$_{CP}$ t$_i$ hogy [elnök legyen t$_i$]]?
whom you-suggest that president become
'Whom do you suggest should be the president ?'
(Kiss, 2002 : 255)

As (1a) shows, the subject of the embedded verb *eljönnének* is marked for accusative Case as if it were the direct object of the highest verb. Example (1b) also shows that the subject of the object clause *kit* assumes accusative Case when it is a long-distance extracted *wh*-word (for more on case marking in Hungarian, see Kiss (1987)). Chomsky (1981 : 174) suggests that the reason why the raised *wh*-word receives accusative Case in such constructions is that it passes through the Spec of the lowest CP. Bejar and Massam (1999) have reinterpreted this account of *wh*-Case marking in Hungarian in the Minimalist Program of Chomsky (1995). They assume that in examples such as (1), the *wh*-word assumes/checks accusative Case when it moves to its surface position through the Spec of the higher v+V. Their approach is consistent with Kiss' (1985) claim that it is impossible to do *wh*-Case marking if the higher verb is not a transitive verb. Assuming with Chomsky (2000, 2001) that Case feature-checking is a reflex purely of agreement, examples such as (1) seem to involve A-bar agreement in which the higher verb agrees with the *wh*-word in Spec, CP.

2.2. *Wh*-agreement in Chamorro

Chamorro, a Western Austronesian language, exhibits a type of agreement that has been referred as '*Wh*-agreement' (see Chung 1994, 1998 ; Georgopoulos,

1991). In this language, the verb of a relative clause or a constituent question agrees in Case with the gap controlled by the head NP or the moved interrogative phrase.[1)]

As an illustration, consider the following Chamorro constituent questions :

(2) a. Pära hafa di un-chächathinassu put [hafa ki*in*annóno'-hu *t*]
for what COMP AGR-worry. PROG about what WH [OBJ]. eat. PROG-AGR
'What's the point of you worrying about what I've been eating ?'

b. Na' tungu' yu' [hafa malago'-mu *t*]
make. know me what WH [OBL]. want-AGR
'Let me know what you want.'

In (2a), the verb agrees with the objective *wh*-trace (glossed 'WH[OBJ]'). In (2b) the verb agrees with the oblique *wh*-trace (glossed 'WH [OBL]').[2)]

Wh-agreement is also observed in long-distance questions. Consider the constituent question in (3).

(3) Hafa ma'a' ñao-ña i palao'an [*t* pära u-fa' mu' i
what WH [OBL].afraid-AGR the girl FUT WH [OBJ 2].AGR-show
si nana-ñ *t*]
mother-AGR
'What is the girl afraid to show her mother ?'

In (3) the embedded verb shows the expected form of *Wh*-agreement. That is, the embedded verb agrees with the *wh*-trace whose case is objective 2 (the Case of oblique objects of verbs of transfer) (glossed 'WH[OBJ 2]'). The matrix verb also shows *Wh*-agreement. However, the form of agreement that it manifests is not controlled by the Case of the original *wh*-trace. The matrix verb agrees with the oblique Case of the intermediate trace in the specifier of C (glossed 'WH [OBL]'). The operation of *Wh*-agreement in long-distance questions can be schematized as in (4).

(4) [CP wh-phrase$_i$ V [CP t_i[Case] V t_i[Case]]]

Long-distance *Wh*-agreement also happens when the gap of the *wh*-construction is nominative. Thus :

(5) Hayi m*in*alagu'-ñiha [*t* pära u-maigu' *t* géspaningi]?
who WH [OBL].want-AGR FUT WH [NOM].AGR-sleep late
'Who do they want to sleep late ?'

The pattern of *Wh*-agreement in (5) shows that the original trace and the intermediate trace bear nominative Case and oblique Case respectively.

It should also be noted that *Wh*-agreement is found in the focus construction. Thus :

(6) I äga' si Magdalena malago'-ña [t pära ta-chuli' *t*].
the banana Magdalena WH [OBL]. want-agr Fut WH [OBJ]. AGR-bring
'The bananas, Magdalena wants us to bring.'

The pattern of *Wh*-agreement in (6) shows that the original trace and the intermediate trace bear objective Case and oblique Case respectively.

We can safely conclude, at this point, that long-distance *Wh*-agreement in Chamorro involves A-bar dependency, in which the matrix verb agrees with a *wh*-word/the focus in Spec, CP.

2.3. Subject-verb agreement in a dialect of English

Kimball and Aissen (1971) note that a dialect of English allows example (7a), but not (7b).

(7) a. the people who Clark think are in the garden
b. *the person who Clark think is in the garden

In (7) the subject *Clark* and the verb *think* do not agree. The embedded verb seems to agree with *who*. Kayne (1989) argues that agreement is actually with

who. This is illustrated by the following examples :

(8) a. the person whose cars John think are beautiful

b. *the people whose car John think is beautiful

Georgopolos (1991) also observed that agreement can be with a null operator :

(9) the things [ø that IBM do]

Kayne (1989) presents an account of such facts. According to his analysis, Agr-s moves to C, and then agrees with the *wh*-phrase in Spec, CP through Spec-head coindexing. The ungrammatical examples in (7) and (8) can now be excluded, as desired. Agr-s, now in C, has a *wh*-phrase with which it should agree, but fails to agree with it. But this account, based on the specifier-head approach to agreement proposed in Chomsky (1995) and related work, cannot be maintained. In the context of the c-command approach to agreement proposed in Chomsky (2000, 2001), agreement of verbs with *wh*-words should be analyzed as involving A -bar agreement between V and the *wh*-word in Spec, CP of the complement clause.

2.4. Object agreement in Innu-aimûn

Branigan and MacKenzie (2002) discuss interesting facts from Innu-aimûn, an Algonquian language. Innu-aimûn is a language in which not only the object but also elements in its complement clause can induce object agreement. This is illustrated in (10), where the object agreement morphology is expressed as a suffix to the matrix verb.

(10) a. Ma tshi-tshissenim-in tân ishpish na nit-aimâ Mânî ?

Q 2-know-1 when I-called Marie

'Do you know when I called Marie ?'

b. Ma tshi-tshissenim- âu tân ishpish na nit-aimâ Mânî ?

Q 2-know-3 when I-called Marie

'Do you know when I called Marie ?'

In (10a) the matrix verb agrees with the embedded subject (1st person), and in (10b) it agrees with the embedded direct object (3rd person). Such agreement is optional ; if it does take place, the agreement-inducing element in the complement clause is interpreted as a topic.

In general, the DP with which the matrix verb agrees may occur in the complement clause, as in (10), or to the left of the complement clause, as in (11).

(11) Tshi-tshissenim- âu-â Mânî tshekuân kuet animiât Pûna utshimâminua ?
2-know-TA-3-Q Marie why called Paul boss
'Do you know why Marie called Paul's boss ?'

The agreement-inducing element can also be a *wh*-phrase in the complement clause, which occurs clause-initially, as in (12).

(12) Tshi-tshissenim- âu-â auen ka-pâ pîtaka ?
2-know-3-Q who is laughing
'Do you know who is laughing ?'

After carefully confirming that this kind of long-distance agreement takes place directly between the matrix verb and the embedded clause elements, Branigan and Mackenzie treat the long-distance agreement as an instance of A-bar agreement, arguing that it occurs because of movement of the agreement-inducing element into Spec, CP.[3)]

2.5. *Wh*-agreement in Kinande

Kinande, a Bantu language, exhibits a type of A-bar agreement that has been referred as '*wh*-agreement' (see Rizzi, 1990 ; Tanaka, 2004). In this language, the morphology of C is affected by an A-bar movement. As an illustration, consider the following Kinande *wh*-questions :

(13) a. IyondI y0 kambale alangIra
who (cl. 1) that (cl. 1) Kambale saw

'Who did Kambale see ?'

b. aBahI Bo kambale alangIra

who (cl. 2) that (cl. 2) Kambale saw

'Who did Kambale see ?'

Generally speaking, every Kinande noun belongs to one of the noun classes. In each example in (13) the complementizer agrees in class with the fronted *wh*-phrase. Under Chomsky's (2000) theory of movement, which I assume in this paper, *wh*-phrases move through Spec, vP. This means that in (13a) and (13b), the complementizer agrees in class with the *wh*-phrase in Spec, vP, as in (14).

(14) [CP C subject [vP wh-phrase v [VP … $t_{wh\text{-phrase}}$ …]]]

3. Branigan and Mackenzie's Minimalist Approach to A-Bar Agreement

Branigan and Mackenzie (2002) have suggested a closest c-command account for the long-distance agreement in Innu-aimûn. Under this theory, in example (10 b), repeated here as (15a), covert A-bar movement of the agreement-inducing topic to the embedded Spec, CP takes place, forming (15b).

(15) a. Ma tshi-tshissenim-âu tân ishpish na nit-aimâ Manî ?

Q 2-know-3 when I-called Marie

'Do you know when I called Marie ?

b. [vP v … [CP Marie when C [TP pro called t_{Marie}]]

The agreement-inducing topic *Marie* bears what they call an O-feature, which the matrix verb uses to identify its goal. Under Agree, the ø-features of the matrix v act as probe, taking those of the fronted topic as goal. ø-feature checking then occurs, as in (16).

(16) [$_{vP}$ v$_{ø}$ … [$_{CP}$ Marie$_{ø,O}$ …]] Agree (v, Marie) =“object agreement”

This ø-feature checking is realized as the object agreement morphology on the matrix verb. The same story carries over to example (11), in which the goal DP occurs in front of a *wh*-phrase.

As for (12), where the matrix verb agrees with an interrogative pronoun, agreement takes place directly between the matrix verb introduced with ø-features and the fronted *wh*-phrase containing O-and ø-features.

The above analysis can be extended to *wh*-agreement in Kinande. Recall that this language allows the verb to agree with the *wh*-phrase in Spec, vP. This phenomenon is unsurprising, in lights of Branigan and Mackenzie’s analysis. Under Agree, the ø-features of C act as probe, taking those of the moved *wh*-phrase as goal, as in (17).

(17) [C$_{ø}$ Subject [$_{vP}$ wh-phrase$_{ø,O}$ v [$_{VP}$ … t$_{wh\text{-}phrase}$ …]]]

The kind of *wh*-agreement in a dialect of English is also accounted for quite neatly under Branigan and Mackenzie’s analysis. The reasoning is essentially identical to that used in the Innu-aimûn case (12), where the matrix verb agrees with the *wh*-phrase in Spec, CP.

However appealing, the O-based analysis cannot be extended to Hungarian type of A-bar agreement where Case is relevant. Recall from subsection 2.1that in long-distance *wh*-movement in Hungarian, the embedded *wh*-subject acquires accusative Case assigned by the matrix verb on its way to the target position :

(18) Kit$_i$ gondolsz hogy t$_i$ látta Jánost ?
who (ACC) you think that saw John (ACC)
‘Who do you think saw John ?’

Under the O-based analysis, the *wh*-phrase in (18) is introduced with O-and ø-

features. It then raises to the embedded Spec, CP, where it enters into a checking relation with the matrix v bearing ø-features, as in (19).

(19) [$_{vP}$ v$_{ø}$ … [$_{CP}$ kit$_{ø,O}$ [$_{TP}$ t$_{kit}$ …]]]

Taking the standard view that Case-marking involves Case, the fact that the *wh*-word in the embedded Spec, CP can be marked accusative Case is not explained in the O-based analysis, because a central element of this account is that A-bar agreement does not involve Case.

The O-based analysis cannot account for the *Wh*-agreement fact in Chamorro, either. As discussed in subsection 2.2, Chamorro exhibits A-bar agreement, where we must posit a Case-bearing goal that is checked by a higher verb, as in (20).

(20) [$_{vP}$ v$_{ø}$ … [$_{CP}$ wh-phrase ø$_{,Case}$ C [$_{TP}$ …]]]

If A-bar agreement reflects a syntactic relation other than Case, as Branigan and Mackenzie suggest, then it is not entirely obvious why such A-bar agreement should exist at all.

From the above discussion, we see that Branigan and Mackenzie's analysis does not provide a completely satisfactory explanation of A-bar agreement. I believe that this suffices to justify seeking an alternative way of accounting for the A-bar agreement constructions under consideration. The analysis of A-bar agreement I argue for is that A-bar agreement reflects a syntactic relation where Case is relevant.

4. Theoretical assumptions and a proposal

4.1. The internal structure of *wh*-words

Following Cheng (1991) and Watanabe (1993), among others, I assume that *wh*

-words are morphologically complex ; basically *who* is a shorthand for *which one person*, and *what* for *which one thing*, and so on. The reason for this is not hard to see : it is that semantically, a *wh*-word has two major parts : a quantifier and a variable. The *which*-part of the *wh*-words is concerned with the quantificational part, whereas the other parts are concerned with the variable.

4.2. Operators and Case

I will assume that operators must be Case-checked, like any other DP/NP. A consequence of this is that the operator is Case-licensed independently of its variable. In fact, there are a number of facts which support this assumption.

Dobrovie-Sorin (1993) argues, based on an analysis of constituent questions in Romanian, that operators are required to be Case-licensed, like any other DP/NP. Consider the following examples :

(21) a. Pe care elev l-ai întîlnit ?
pe which student him-have (you) met
'Which student did you meet ?'
b. ?? Care elev l-ai întîlnit ?
Which student him-have (you) met
'Which student did you met?'

As these examples show, the preposition *pe* is compulsory in *wh*-constructions that take obligatory clitics. Since in these examples accusative Case is assigned to the clitic, it cannot be transmitted to the *wh*-phrase. Assuming that *wh*-phrases are subject to the Case Filter, the dummy Case marker *pe* must be inserted, explaining the contrast between (21a) and (21b). This fact supports the existence of operator Case in natural languages.

The claim that operators must be Case-checked is independently motivated by the fact that the *wh*-chain needs a Case in examples of the following kind :

(22) a. *He said [Sam to be a good candidate].

b. Who did he say [t to be a good candidate]?

The ungrammaticality of (22a) is attributed to lack of Case for *Sam*, so the original trace of *who* in (22b) should be Caseless as well. But Kayne (1984) observes that the matrix verb *say* could assign Case to the intermediate trace of *who* in the embedded Spec, CP. Thus, no problem arises for this case with repect to Case-checking. So the derivation converges, explaining the grammaticality of (22b). If Kayne's analysis of examples like (22b) is correct, then it serves as evidence of our view.

Since Kayne (1984), it is well known that French ECM constructions such as (23a) are rescued if the subject of their complement clause undergoes *wh*-movement.

(23) a. *Je crois [CP C [TP Jean être le plus intelligent de tous]].

I believe Jean to-be the most intelligent of all

'I believe Jean to be most intelligent of all.'

(Kayne 1984 : chapter 5)

b. Quel garçon$_i$ crois tu [CP t_i C [TP t_i être le plus intelligent de tous]]?

Which boy believe you to-be the most intelligent of all

'Which boy do you believe to be most intelligent of all ?'

(Kayne 1994 : chapter 5)

With the operator Case hypothesis, we can correctly account for the well-formedness of (23b). The Spec of TP where *Jean* occurs in (23a) is not a position where any overt Case is checked (but null Case might be checked). But Kayne (1984) observes that the Case-feature of the *wh*-phrase in the embedded Spec, CP can be checked by the matrix verb, resulting in the well-formedness of (23b). If this argument is correct, it motivates the existence of operator Case.

An analysis that treats operators as having Case easily takes care of constructions like (24).

(24) a. *Who is it likely [CP t [TP t will read the book]]?

b. *Who does it appear [CP t [TP t likes Mary]]?

For illustration, let us look at example (24a). The Case of the original trace of *who* is checked by T in the embedded clause, in the manner of subjects. Of particular importance of my theory of Case is the hypothesis that *who* also carries Case. If this is correct, then the extra Case of *who* is required to be checked by the matrix adjective *likely*. Since adjectives are constructions in which Case is not available, there is no legitimate structure where the additional Case is licensed. Hence, the ungrammaticality of example (24a) is correctly predicted.[4)]

4.3. Chomsky's (2000) theory of movement

I adopt Chomsky's (2000) theory of overt movement. Under the feature-movement theory developed in Chomsky (1995), although LF movement is understood as movement of formal features only, overt movement is understood as movement of the whole syntactic category (i.e., α) that the relevant features are contained in. To illustrate, let us consider the following example :

(25) I wonder who Mary likes.

In this example, the *wh*-feature of *who* must move to establish a checking relation with the corresponding feature on the C head. It is required to pied pipe the whole *wh*-word *who*. The reason for this is that the feature movement would produce an illegitimate object at PF, forcing the derivation to crash in the PF component.

Chomsky (2000) presents a different theory of overt movement, in which overt movement is understood as consisting of the basic operations Agree and Merge. More specifically, Agree is assumed to handle feature checking, as in (26a), and Merge is assumed to merge the whole category that the feature is contained in, as in (26b).

(26) a. [XP X [..F..] [YP Y [..F..]]]

b. [XP X [..F..] [YP Y [..F..]]]

This theory of overt movement diverges in two major but related respects from Chomsky's (1995). First, features do not move ; and second, feature-checking is a reflex of the Agree relationship. This means that feature-checking is not a reflex of the general process of Spec-head agreement ; the Spec head relation is irrelevant.

Chomsky (2000, 2001) presents a phase-based theory of overt *wh*-movement, in which overt *wh*-movement is understood as applying successive cyclically, as in (27).

(27) Spec-C_2…Spec-$\underline{v}_2$…Spec-C_1…Spec-$\underline{v}_1$…wh-phrase

As shown in (27), the *wh*-phrase moves through the Specs in succession, landing finally in the Spec of C_2. vP is a phase ; CP is also a phase. Under this analysis, it must then be the case that *wh*-phrases move phase-to-phase. For example, in *what does John think that Mary likes ?* the *wh*-phrase what moves in a successive cyclic fashion, as shown in (28).

(28) [CP what does John [$\underline{v}$P think [CP that Mary [$\underline{v}$P likes t]]]]

It must be noted that long *wh*-movement, in which a *wh*-phrase moves out of its clause in a single step, is not allowed in this system.

4.4. Proposal : Split Case-Feature Hypothesis

What the basic assumptions I have made in the preceding subsections in combination suggest is a new theory of Case, in which a *wh*-word has two structural Cases : one is a Case relevant to the A-system (A-Case) and the other a Case that

belongs to the A-bar system (Op-Case). Under the further assumption that the *wh*-feature is occupying the D position (see Cheng, 1991), an Op-Case is base-generated in the D-position, as in (29).

(29) [DP D Op-Case NP]

According to Miyara (2000), Case (A-Case in my sense) is base-generated in the N-position. On this view, the phrase structure of *wh*-phrases looks like (30).

(30) [DP D Op-Case [NP N A-Case]]

Structure (30) directly incorporates Uriagereka's (1999a) proposal, according to which the operator-related features and the Case-feature of some lexical item are not contained in the same bag of features. It is also consistent with the idea, proposed by Koizumi (1994) and Chomsky (1995), that lexical elements contain hierarchically ordered features which have to be checked in a certain order.

In the new version of Case, the Hungarian *wh*-Case marking example in (18) has the following abstract structure at some point :

(31) [vP vø … [CP [DP Dø,Op-Case NP] C …]]

In Chomsky's (2000) model the matrix v in (31) will be able to check its agreement features with the moved *wh*-phrase as long as the latter has an uninterpretable feature. As the *wh*-phrase in Spec, CP bears an unchecked Op-Case feature in (31), the matrix v uses this feature to identify its goal. Checking then takes place, resulting in the observed Case marking pattern.

At this point, it is helpful to clarify the "intuitive" basis of the claim that operators must be Case-licensed, like any other DP/NP. Following Milsark (1974), many authors, among them Bowers (1988) and Diesing (1992), make a distinction between weak and strong noun phrases based on their determiners : noun phrases such as *three books* are considered to be weak, whereas noun phrases such as *every book* are classified as strong. Bowers (1988) further argues that strong noun phrases are DPs, while the weak ones are NPs. This difference is shown in (32).

(32) a. [DP every [NP book]]

b. [NP three books]

Under this view, NP must have a Case feature. The reason for this is that it enters into a Case feature checking relation with v/V in an ordinary active transitive clause. It is important to note that DP, like NP, has a Case feature. The reason for this is not hard to see : it is that in languages like Turkish and Persian, DP, in contrast to NP, must appear with an overt Case marker. So, we can say that both NPs and DPs are universally 'Cased', at least abstractly. If this is correct, then adding the *wh*-part with an extra Case seems to be viable.

That something like this may be a general requirement for complex noun phrases is already independently suggested. Hornstein (2001) argues that anaphoric expressions such as *himself*, being complex noun phrases, bear multiple Case. Following Postal (1969), Pesetsky (1978) shows that in pronoun-noun constructions such as *us linguists*, the pronoun is a head determiner which takes the noun as its complement, as follows :

(33) [DP Us [NP linguists]] understand …

Under the assumption that the accusative marked pronoun in subject position is a default Case (Weerman and Evers-Vermeul 2002), the noun *linguists* is assumed to be inserted with structural Case. Given this reasoning, one can thin of *us linguists* as having multiple Case. Lasnik and Sobin (2000) present a theory of *whom*, in which *whom* is composed of *who-* and the ACC *–m* suffix. According to Lasnik and Sobin (2000), *who-* is checked within the normal Case system, whereas ACC on *–m* is checked by a set of extra-grammatical rules called 'grammatical viruses.' The crucial point to notice about this analysis is that the complex noun phrase *whom* bears multiple Case.

5. Analysis

In this section, I would like to show that the new version of Case presented in subsection 4.4 achieves remarkable descriptive and explanatory success in the area of A-bar agreement constructions and related constructions.

5.1. *Wh*-Case marking in Hungarian

First, consider the Hungarian (18), repeated here as (34).

(34) Kit$_i$ gondolsz hogy t$_i$ látta Jánost ?
who (ACC) you think that saw John (ACC)
'Who do you think saw John ?'

In the new version of Case, the *wh*-word *kit* has two Case features, Op-Case and A-Case, as in (35).

(35) [DP wh Op-Case [NP someone A-Case]]

Since *kit* bears an A-Case in (34), it enters a relation of agreement with the embedded T in its base position, in the manner of subjects (36).

(36) [TP Tø [vP [DP whø,Op-Case [NP someoneø,A-Case]] v [VP látta Jánost]]]

Notice that in this derivation, although the position of the Op-Case of *kit* is between T and the NP, it is completely invisible as an intervener to T-NP agreement. The reason for this is that the relevant Op-Case percolates from *wh* to the whole DP and does not c-command the A-Case-bearing NP. As is well-known, locality constraints on syntactic dependencies are crucially sensitive to c-command relations, and potential interveners between a probe and a goal do not count for locality if they do not c-command the goal.[5)]

According to the standard theory, the EPP requirement of the embedded clause can only be satisfied by raising the vP-internal subject in overt syntax. In the next

step, then, the whole DP merges with the embedded T, yielding (37).

(37) [TP [DP whø,Op-Case [NP someoneø,A-Case]] T [vP tDP …

I assume a Multiple Spell-out analysis of left branches, as assumed in Uriagereka (1999b) and Nunes and Uriagereka (2000). On this analysis, the left branches are literally gone from the structure, because they have been sent to PF. Adding structure to them or extraction from them is therefore impossible. The Multiple Spell-out account of left branches is best illustrated by (38).

(38)[XP [DP a critic of who] X [YP see you]]

In (38), the complex *wh*-phrase *a critic of who* appears in the left periphery of XP. Consequently, it must be spelled out before it merges with the rest of the phrase marker for reasons that I do not want to go into in detail.[6] When Spell-out applies to the subject DP in (38), the computational system no longer has access to its constituents and, therefore, *who* cannot be extracted out of it. Of course, in *who saw Mary* ? the *wh*-word *who* is not spelled out before being connected to the rest, since it is a single terminal. This allows *who* to be accessible to further computations in spite of the fact that it appears in the left periphery of XP.

In (37), the fronted DP, being a complex structure, is already spelled out due to the fact that it constitutes a left branch and, therefore, its constituent parts become inaccessible to the computational system. Notice that in this derivation, the *wh*-part of *kit* is accessible to further computation because of the fact that the relevant operator related-features percolate from D to DP. Then the whole DP is moved to the Spec of the embedded C due to the fact that derivation takes place by phase. The resulting structure is (39).

(39) [CP [DP whø,Op-Case NP] C [TP tDP …

The *wh*-part of *kit*, as we have seen, is accessible to the computational system and, therefore, it enters a relation of agreement with the corresponding feature of the matrix v after merger of the matrix v, valuing the Op-Case feature of the *wh*-phrase.

This accounts for the fact that the subject of the object clause *kit* in (34) assumes accusative Case. In the next step, then, the *wh*-word *kit* moves out of the embedded clause through the Spec of the matrix v. So the derivation converges, explaining the grammaticality of (34).[7, 8)]

As the attentive reader will have already noted, two potential derivations underlie example (34). In one derivation, the embedded T Agrees with the A-Case of *kit* first as shown by the structure in (36). In the other derivation, it Agrees with the Op-Case of *kit* before it Agrees with the A-Case of *kit*.

Suppose now that we take a derivation in which the embedded T Agrees with the Op-Case of *kit* first. In this derivation, at some stage we construct the structure (40).

(40) [TP [DP whø,Op-Case [NP someoneø,A-Case]] T [vP tDP …

Note that the Op-Case of the moved DP has been checked by the embedded T in its base position. Once the stage in (40) is reached, the A-Case of the moved DP is not accessible to further computation because of the fact that its constituent parts are gone. There is, then, no legitimate stage of the derivation where the A-Case of *kit* is checked. The derivation therefore crashes. This accounts for the fact that the embedded T must Agree with the A-Case of *kit* in the embedded clause, in the manner of subjects.

The question arises of how this left branch effect is avoided in structure (36), which involves T-NP agreement. Notice that in this derivation, the A-Case of *kit* cannot enter a relation of agreement with the corresponding feature of T after merger of T. The reason for this is that the elements inside *kit* have already been spelled out and are not visible to computation. Hence, example (34) itself is predicted to be bad, contrary to fact. Thus, I am forced to assume that the constituent parts of *kit* in the Spec of v̲P is accessible to the computational system at the stage where it should check the A-Case of T. This assumption seems to be necessary for

independent reasons. For example, as argued in Pesetsky (1995 : 221-223) and Sauerland and Elboune (2002), extraction form a subject in the Spec of vP is possible, as is illustrated by (41).

(41) Which constraint$_i$ are good examples of t_i always sought ?

Sauerland and Elboune (2002) assume that for reasons that do not concern us here, the subject *good examples of* t_i remains in the Spec of vP in overt syntax at the point that *which constraint* is extracted.[9, 10)]

5.2. *Wh*-agreement in Chamorro

As observed in section 2.2 above, Chamorro exhibits A-bar agreement, where we must posit a Case-bearing goal that is checked by a higher verb. I suggest that an explanation of A-bar agreement in Chamorro follows if we assume the proposed analysis.

To begin with, consider example (3), repeated below, in which the complement object Agrees with the embedded verb first and then Agrees with the main verb.

(42) Hafa ma'a' ñao-ña i palao'an [*t* pära u-fa' mu' i
what WH[OBL].afraid-AGR the girl FUT WH[OBJ2].AGR-show
si nana-ñ t]
mother-AGR
'What is the girl afraid to show her mother ?'

The *wh*-word *hafa* in (42) bears two structural Cases, A-Case and Op-Case. First, the embedded verb uses the A-Case of *hafa* to identify its goal. Checking then occurs, resulting in the observed agreement features. Subsequently, the *wh*-word moves out of the embedded vP to the Spec of the embedded C, forming the abstract structure (43).

(43) [CP [DP whø,Op-Case [NP someoneø,A-Case]] … [vP …tDP …

What is a functional category involved in A-bar agreement ? Let us assume, following Chung (1998), that the relevant functional category is I (=Inflection). On this view, the *wh*-word in (43) moves to the Spec of the matrix v due to the fact that derivation takes place by phase. The resulting structure is (44).

(44) [vP [DP whø,Op-Case [NP someoneø,A-Case]] v [CP tDP …

Recall from section 5.1 that the D part of a moved *wh*-phrase is accessible to further computation. Then the *wh*-part of *hafa* in Spec, vP Agrees with the matrix I after merger of the matrix I, thus explaining the matrix agreement pattern (on the assumption that I must merge with a verbal element in PF).

Consider next example (5), repeated, in which the *wh*-word originates in the subject position of the finite object complement.

(45) Hayi mi*n*alagu'-ñiha [*t* pära u-maigu' *t* géspaningi]?
Who WH[OBL].want-AGR FUT WH[NOM].AGR-sleep late
'Who do they want to sleep late ?'

The explanation for the Chamorro case (45) is the same as for Hungarian. The *wh*-word *hayi* bears two structural Cases, A-Case and Op-Case. The NP part of the *wh*-word Agrees with an appropriate functional head inside the embedded clause, in the manner of subjects. The D part of the *wh*-word, in turn, Agrees with the matrix I when the *wh*-word moves out of the embedded clause to the Spec of the matrix v. In this way, we see why the agreement patterns in (45) are possible, explaining the grammaticality of (45).

Finally, consider example (6) (repeated here as (46)), in which the focus participates in *Wh*-agreement.

(46) I äga' si Magdalena malago'-ña [*t* pära ta-chuli' *t*].
the banana Magdalena WH[OBL].want-agr Fut WH[OBJ].AGR-bring
'The bananas, Magdalena wants us to bring.'

Following Cinque (1990), Lasnik and Stowell (1991), Rizzi (1996), and subsequent

work, I assume that focus constructions, like *wh*-constructions, are quantificational because the focus operator A-bar binds a variable in the TP-internal position. Then the focus in (46) bears two structural Cases, A-Case and Op-Case. The NP-part of the focus Agrees with an appropriate functional head inside the embedded clause, in the manner of objects. The D part of the focus, in turn, Agrees with the matrix I when the focus moves out of the embedded clause to its surface position. In this way, we see why the focus participates in *Wh*-agreement.

5.3. Subject-verb agreement in a dialect of English

Recall from section 2.3 that in a dialect of English, the embedded *wh*-subject agrees with the higher verb on its way to the target position :

(47) the people who Clark think are in the garden (= (7a))

This pattern also falls into place. First, the embedded T uses the A-Case of *who* to identify its goal. Checking then occurs, resulting in the observed agreement features. Second, the *wh*-word *who* moves to the Spec of the embedded C on its way to the final landing site, thus creating the necessary configuration for A-bar agreement in the higher clause.

As noted by many linguists, for some speakers, especially, it seems, British speakers, *whom* can occur in subject position of the complement of *think*-class verbs, as in the following examples from Kayne (1984) and Huddleston and Pullum (2002).

(48) a. the man whom I believe has left

b. A man with a large waxed moustache and a mop of curly damp hair, whom Hal though might be his uncle Fred, said, 'That's a fine bird you're carving, Bert.'

Relative pronoun *whom* in (48) seems to be a product of A-bar agreement. This pattern also falls into place. In the new version of Case, the variable part of *whom*

Agrees with T inside the lowest clause, in the manner of subjects. The operator part of *whom*, in turn, Agrees with the higher v when the *wh*-word moves to the Spec of the lowest C, resulting in the observed Case morphology. The reasoning is essentially identical to that used in the long distance *wh*-movement in Hungarian with respect to licensing of *kit* 'who (ACC) '.

5.4. Object agreement in Innu-aimûn

We will turn next to A-bar agreement in Innu- aimûn described in Branigan and Mackenzi (2002). Consider first example (12), repeated below, in which the matrix verb agrees with a *wh*-phrase in Spec, CP.

(49) Tshi-tshissenim- âu-â auen ka-pâ pîtaka ?
2-know-3-Q who is laughing
'Do you know who is laughing ?'

Given the basic assumptions I have made in section 4, the *wh*-word *auen* 'who' bears two Case features, A-Case and Op-Case. In the new version of Case, the A-Case part of *auen* Agrees with T in the subordinate clause, in the manner of subjects. The Op-Case part of *auen*, in turn, Agrees with the matrix v when the *wh*-word moves to the Spec of the embedded C, resulting in the occurrence of object agreement on the verb *tshissenim*. In this way the Innu- aimûn case (49) falls into place.

Consider next example (10b), repeated below, in which the matrix verb agrees with a topic in its interrogative complement.

(50) a. Ma tshi-tshissenim-âu tân ishpish na nit-aimâ Mânî ?
Q 2-know-3 when I-called Marie
'Do you know when I called Marie ?'

As noted before, Branigan and Mackenzie analyze the long-distance agreement of this sort as involving a covert A-bar movement of the agreement-inducing topic to

the embedded Spec, CP, followed by an operation that checks the matrix v's ø-features against the corresponding features of the topic. The element to be interpreted as a topic bears an O-feature so that it can be a candidate for an Agree operation.

Translating their analysis into our framework, within the embedded clause the A-Case part of the topic *Mânî* 'Marie' Agrees with v, in the manner of objects, and the Op-Case part of *Mânî* Agrees with the matrix v when the topic moves to the embedded Spec, CP. This cross-clausal ø-feature checking is realized as the object agreement morphology on the matrix verb. The same story carries over to examples (10a) and (11).

It is important to note that this account of examples in which the goal DP is a topic relies crucially on the assumption that a topicalized DP, like a *wh*-phrase, bears an Op-Case feature. That topicalized DPs have an Op-Case feature is independently motivated. Rizzi (1997) argues for the existence of a Topic operator (and hence of a Topic projection), which he thinks has an overt manifestation in certain languages : in Romance languages, the Topic operator is supposed to correspond to the (resumptive) clitic ; in languages like English, this operator is null. Interestingly, Svenonius (2004) arrives at essentially the same conclusion, on the basis of data from an independent empirical domain in various languages. I would like to lay special emphasis on Svenonius' observation that in long-distance A-bar agreement in languages like Innu-aimûn and Tsez, the agreement-inducing topic has an operator phrase. Assuming that their analyses are correct, we can say that topicalized DPs have an Op-Case feature.

Additional confirmation for the idea that a topicalized DP bears an Op-Case feature comes from Bruening's (2001, 301) observation that in the Japanese example in (51b), the topicalized DP *Tokyo* based-generated at the left-edge of the lower clause Agrees with the higher verb *omotta* and receives accusative Case from it.

(51) a. Tokyo-wa sumi-nikui.
Tokyo-TOP live–hard
'Tokyo is hard to live in.'
b. John-wa Tokyo-o sumi-nikui-to omotta.
John-TOP Tokyo-ACC live-hard-COMP thought
'John thought that Tokyo is hard to live in.'

Given that the topic *Tokyo* is not an argument of the embedded clause, a natural explanation for this fact is that it has an Op-Case feature, which appears overtly.

Similarly, example (52), where the subject of the embedded verb *Bill* is marked for accusative Case as if it were the direct object of the main verb, shows that a topicalized DP bears an Op-Case feature.

(52) a. John-ga [Bill-ga baka-da-to] omot-teiru.
John-NOM Bill-NOM fool-COMP think-PROG
'John thinks that Bill is a fool.'
b. John-ga [Bill-o baka-da-to] omot-teiru.
John-NOM Bill-ACC fool-COMP think-PROG
'John thinks that Bill is a fool.'

Tanaka (2005) argues that the complement subject in (52b) is raised to the Spec of the embedded C, and that the DP raised in this way is interpreted as a topic for which the rest of the clause functions as a (complex) predicate. Then Agree can take place directly between the matrix v and the raised subject, since the goal DP is in the accessible part of the CP phase. This accounts for the fact that the subject of the subordinate clause in (52b) assumes accusative Case. Given that the A-Case of the topic *Bill* is checked by T, in the manner of subjects, a natural explanation for this fact is that it has an Op-Case feature, which appears overtly. It is interesting to note that looked in this way, Case marking in raising to object in Japanese recalls object agreement in Innu-aimûn.

5.5. *Wh*-agreement in Kinande

Consider example (13a), repeated here as (53).

(53) a. IyondI y0 kambale alangIra
who (cl.1) that (cl.1) Kambale saw
'Who did Kambale see ?'

As mentioned in subsection 2.5, in this Kinande example, the complementizer agrees with the fronted *wh*-phrase. This fact can be properly explained by the proposed analysis. The *wh*-word *IyondI* 'who (cl.1)' bears two structural Cases, A-Case and Op-Case. The A-Case part of the *wh*-word Agrees with an appropriate functional head inside vP, in the manner of objects. According to Chomsky's theory of movement I gave in section 4, phrases move phase-to-phase. In the next step, then, the *wh*-phrase merges with vP, yielding (54).

(54) [$_{vP}$ IyondI subject v [alangIra t_{IyondI}]]

The *wh*-Case part of the fronted *wh*-phrase, as we have seen, is accessible to the computational system and, therefore, it Agrees with C after merger of C, followed by movement of the preposed *wh*-phrase to its surface position. This accounts for the fact that the complementizer in (53) agrees in class with the fronted *wh*-phrase.[11)]

5.6. Summary

To summarize, I have shown that certain DPs (operators) enter the derivation with two structural Cases : One is a Case relevant to A-agreement (A-Case) and the other a Case that renders A-bar goal active for A-bar probe (Op-Case). In this approach, A-bar agreement, like A-agreement, always reflects a relation where Case is relevant. Consider the structure (55) (where > is c-command) :

(55) Xprobe > [$_{DP}$ Op-Case [$_{NP}$ A-Case]]

In this structure, the probe enters an Agree relation with the A-Case part of the DP.

This illustrates a standard case of A-agreement. Notice that A-agreement must take place prior to A-bar agreement triggered by the presence of an Op-Case feature on a DP, because, at the relevant derivational point, the NP-part of DP becomes invisible to outside agreement. In the next step, then, the whole DP raises to Spec, vP or Spec, CP to become accessible to a higher probe, yielding (56).

(56) Yprobe > [vP/CP [DP Op- Case [NP A-Case]] … tDP …

A subsequent Agree relation between the probe and the goal containing the Op-Case will then be possible.

6. Split Case Feature Hypothesis

In the previous sections I have proposed a new analysis of A-bar agreement. The proposed analysis is crucially based on the assumption that a *wh*-phrase (and a topic/a focus) has two Case features (the Split Case Feature Hypothesis) : one is a Case feature relevant to A-agreement and the other a Case feature that activates A-bar agreement. This assumption is not novel within the framework roughly as laid out in the essays in Chomsky (1995), as noted in section 4, but we will nonetheless make some observations about it.

6.1. Partial *wh*-movement

Under the Split Case Feature Hypothesis, the Op-Case and the A-Case of an operator phrase are not contained in the same bag of features. A consequence of this is that there should be some languages where a *wh*-item possesses only Op-Case. Hungarian may constitute one such language.

As is well-known, in German and many other languages there are *wh*-questions which result from the use of a “Partial Movement” strategy, forms in which a *wh*-phrase moved to the –Q C position of a subordinate clause is interpreted as taking

scope at the +Q C of a higher clause which itself is filled by an uninterpreted *wh*-expletive element. A German example is given in (57).

(57) Was glaubst du, wen_i er t_i gesehen hat ?
what believe you whom he seen has
'Who do you believe he has seen ?'

Here, the target [+Q] position of a *wh*-phrase is occupied by a scope marker *was* 'what', and the *wh*-phrase is raised to an intermediate [-Q] Spec C position.

Over the past several years, a number of analyses have been proposed to deal with partial *wh*-movement constructions ; cf., for example, McDaniel (1989) and Horvath (1997). To review these analyses would carry us too far away from the purpose of this paper ; therefore, we do not discuss them. The important point to notice is that, if the Split Case Feature analysis is correct, it gives a good account of the partial *wh*-movement construction in Hungarian (58).

(58) a. Mit/*mire mondtál, hogy mire szamitanak a gyerekek ?
what-ACC/what-AL said-2SG that what-AL count-3PL the kids-NOM
'What did you say that the kids expected ?'

b. Mire/*mit számítasz, hogy mit fognak mondani a gyerekek ?
what-AL/what-ACC count-2SG that what-ACC will-3PL say the kids-NOM
'What do you expect that the kids will say ?'

Horvath (1997) shows that both *wh*-phrase and expletive in Hungarian partial *wh*-movement constructions are independently Case-marked. In (58a), for example, the expletive bears accusative Case, which is not a default Case but has been shown to correspond to the Case assigned by the predicate of the clause in whose CP position the expletive occurs ; consequently it does not coincide with the Case of the partially-moved *wh*-phrase.

Cheng (2000) proposes an interesting analysis of partial *wh*-movement constructions, in which the scope marker is part of the *wh*-phrase. More

specifically, the scope marker is the *wh*-feature of the *wh*-phrase, as in (59).

(59) [DP wh-core]

Partial *wh*-movement then involves "half way" movement of the whole *wh*-phrase, followed by overt movement of the *wh*-feature to its surface position. Take (57) for example. The derivation of (57) creates the following syntactic object at some point :

(60) [CP [TP er [DP wh-wen] gesehen hat]]

Under Chomsky's (1995) theory of movement, which she assumes in her paper, overt *wh*-movement involves a two-step movement : feature movement and category movement. For example, in *whose brother did you see ?* the *wh*-feature of *whose* moves to establish a checking relation with the corresponding feature of C (Attract), as in (61).

(61) [CP C[+wh] you did see [DP whose[+wh] brother]]

It must be noted that Attract should be in the form of feature-movement even in overt syntax. This operation is followed by Merge of the whole category *whose brother* to the Spec of C for reasons independent of feature checking (pied piping), as in (62).

(62) [CP [C [+wh] C [+wh]] you did see [DP whose[+wh] brother]]

Thus, in (60), the *wh*-feature of *wh-wen* moves to the embedded CP, followed by movement of the whole *wh*-phrase to the embedded CP. Subsequently, the *wh*-feature is moved to the matrix CP, leaving the stranded *wh*-word in the embedded CP. The *wh*-feature in the matrix CP is later spelled out as *was*.

The fact that both *wh*-word and expletive in examples such as (58) are independently Case-marked is expected in the new version of Case if we assume that Cheng's analysis is basically tenable. In (58a), the *wh*-expletive and the contentful

wh-word begin as a constituent :

(63) [DP mit Op-Case [NP mire A-Case]]

The A-Case of *mire* is checked in the embedded clause via Agree and the whole *wh*-phrase moves to a left-peripheral A-bar position, yielding (64).

(64) [CP [DP mit Op-Case [NP mire A-Case]] … tDP …]

The Op-Case of the moved DP, as we have seen, is accessible to further computation. Because of this, it is licensed by the matrix v, after which the *wh*-expletive *mit* moves to the Spec of the matrix C through the matrix vP, stranding the contentful *wh*-phrase in the embedded CP ; hence the example is well-formed, as expected. The same story carries over to example (58b).

The conclusion of this discussion of forms such as (58) would seem to be that in Hungarian, the *wh*-expletive, not being an argument, possesses only Op-Case. It must also be noted that examples such as (58) provide evidence for the claim that these two Case features correspond to the different parts of a complex *wh*-word (we shall return to this point later).[12)]

6.2. *Wh*-items that are variables

In the previous section, I gave one piece of evidence to show that *wh*-items that are always operators possess only Op-Case. Assuming that the Split Case Feature Hypothesis is on the right track, it must also be the case that *wh*-phrases that are always variables bear A-Case rather than Op-Case. A detailed description of how various languages in which *wh*-items are variables pattern in this respect would take us too far afield. However, if we take a look at echo question-introduced *wh*-phrases in English and *wh*-questions in Japanese, we can see that the prediction is correct.

Sobin (1990) shows in full detail that echo question-introduced *wh*-phrases do not move to the Spec of CP. His arguments are mainly based on the following

examples, from Sobin (1990).

(65) a. What does who like ?

b. What does Mary think who baked ?

c. Mary thinks who ate the pie ?

d. Mary knows that who ate the pie ?

Example (65a) does not display a Superiority effect. This strongly suggests that the echo question-introduced element *who* does not undergo movement. Example (65b) violates the *Wh*-Island Condition. Nonetheless, it is acceptable. This lack of a *wh*-island in (65b) is due to the fact that the echo question-introduced element *who* does not undergo movement. Example (65c) is acceptable in spite of the fact that verbs of the *think* type do not take *wh*-complements. This fact is readily explained by assuming that the echo question-introduced *who* does not undergo movement to the Spec of the embedded C. Example (65d) shows that in echo questions, *that*-trace violations are acceptable. This being the case, echo question-introduced *wh*-phrases cannot undergo movement.

All of these facts lead us to conclude that echo questions do not involve movement to the Spec of CP. How, then, does the echo question-introduced *wh*-phrase get interpreted in English ? Sobin (1990) claims that English echo questions make use of unselective binding (Pesetsky (1987)). Thus, English echo questions have the following schematic representation base generated directly :

(66) [CP Op [TP …wh-phrase (variable) …]]

Given this, we can test whether our prediction is correct. To begin with, consider the following examples :

(67) a. You think who bought that painting ?

b. *You think whom bought that painting ?

As example (67b) shows, echo question-introduced *whom* cannot appear in the subject position of the embedded clause. Why should this be the case ? If echo

question-introduced *wh*-phrases have an Op-Case feature, then examples such as (67 b) are expected to be grammatical due to the fact that the *wh*-word has to move to the surface position through the Spec of the embedded C, thereby creating a configuration for the licensing of *whom*. But if, as we claim, an echo question-introduced *wh*-element, being a variable, does not bear an Op-Case feature, then the problem disappears : since *whom* in (67b) possesses only A-Case, it fails to Agree with the higher v. Thus the ungrammaticality of example (67b) with *whom* is correctly captured.

We see below that (68a) may be echo-questioned as in (68b) :

(68) a. I wonder what Mozart bought.

b. You wonder what who bought ?

However, (69) is not an acceptable echo-question to (68a), since *whom* appears in the example :

(69) *You wonder what whom bought ?

The ungrammaticality of (69) strongly suggests that echo question-introduced *wh*-elements, always being variables, bear only A-Case.

We will now consider *wh*-questions in Japanese. In this language, *wh*-items do not have to be displaced in overt syntax, as can be seen from (70) :

(70) John-wa nani-o yonde-iru no ?

John-TOP what-ACC read-PROG Q

'What is John reading ?'

Under the common current assumption that *wh-in-situ* in Japanese is always a variable, the Split Case Feature Hypothesis predicts that in this language, the subject of the subordinate clause cannot be marked accusative Case even when it is a *wh*-word. This prediction appears to be confirmed, as in (71).

(71) John-wa [dare-ga/*-o daitoryo-ni naru to] omotteiru-no ?

John-TOP who-NOM/ACC president become COMP think-Q

'Who does Bill think becomes president ?'

Example (71) shows that an accusative *wh*-word cannot appear in the subject position of the embedded clause.

6.3. Case morphology

The Split Case Feature Hypothesis predicts the existence of languages where both Case features are morphological. Some evidence for this possibility is provided by long-distance *wh*-movement constructions in Cuzco Quechua. Consider the following constituent question adopted from Lefebvre and Muysken (1988 : 142) : [13)]

(72) pi-qpa-ta-ni muna-nki [ei platanu ranti -mu-na-n-ta].
Who GE AC AF want 2 banana exchange CIS NOM 3 AC
'Who do you want to buy bananas.'

In (72) the *wh*-phrase *pi-qpa-ta-n* originates in the subject position of the embedded nominalized clause, where it receives morphologically realized genitive Case, which Lefebvre and Muysken (1988) take to be a structural Case (see Sportiche, 1998) for the view that genitive Case is a structural Case). En route to its surface position, it receives accusative Case from the matrix verb *muna-nki*. Notice that, morphologically, this second Case also appears on the *wh*-word. The Quechua case (72) parallels the Hungarian case (34) exactly, the sole difference being that in (72), a *wh*-phrase carries two Case markers.

It is important to notice that locating Op-Case higher than A-Case is fully consistent with the distribution of Case on DPs involved in long-distance *wh*-movement in Cuzo Quechua. Lefebvre and Muysken (1988) observe that when the Case assigned to the raised *wh*-word is nominative, it only receives matrix accusative Case overtly ; when it is genitive, it assumes genitive and accusative ; when it is accusative, it overly receives only one accusative Case ; when it is

oblique, it is only marked for oblique Case :

(73)

	embedded	raised	
nominative	ø	-ta	nominative+objective
genitive	-q (pa)	-q (pa)-ta	genitive+objective
objective	ta/ ø	-ta	objective
oblique	obl.	obl.	oblique

Baker (1985) shows in full detail that the surface arrangements of affixes mirror the order in which the processes which give rise to them apply. He formulates this observation in terms of a principle which he refers to as the Mirror Principle :

(74) The Mirror Principle

Morphological derivations must directly reflect syntactic derivations (and vice versa).

Given the Mirror Principle, the order [N+A-Case+Op-Case] is explicable : since the A-Case feature of the nominal complex must be checked before the stage in which its Op-Case is checked, on the assumption that Op-Case dominates A-Case, the only derivation of the nominal complex allowed by the Mirror Principle is the one where A-Case attaches to N before Op-Case, hence the order [N+A-Case+Op-Case].

Interestingly, if this analysis of the configuration of Case in (73) is correct, then it serves as evidence of the claim that the two Case features correspond to the different parts of a complex *wh*-word.

6.4. A-Case and visibility

A central element of the Split Case Feature Hypothesis is the idea that operators contain hierarchically ordered Case features. Adopting the main idea of Uriagereka (1999) /Nunes and Uriagereka (2000), this means that the A-Case of an operator must be checked before the stage in which its Op-Case is checked. The reason for this is that in Uriagereka's theory, a lower phrase becomes opaque to outside

operations at a certain point in the derivation.

It is important to note that this element of the Split Case Feature Hypothesis allows for a principled explanation of improper movement. It is well known that A-movement cannot take place across a CP boundary. As noted above, every movement which crosses a CP boundary must proceed through the embedded CP Spec, a typical A-bar position, forming (75).

(75) [CP DP [TP … tDP …]]

On the assumption that the fronted DP, being quantificational, consists of an operator and a variable, it bears two Cases, as in (76).

(76) [DP Op-Case [NP A-Case]]

Since, as (76) shows, an A-Case feature is associated with lower structure within the DP than an Op-Case feature, in (75) the NP parts of the fronted DP, including A-Case, are not accessible to the computational system, because it constitutes a left branch. Therefore, long distance A-movement out of CPs is not allowed, yielding the effect that improper movement is disallowed.

To take a simple example, consider a standard case of super-raising in English, like (77).

(77) *who seems [CP twho that [TP it is likely [TP twho to win]]]

Under the Split Case Feature Hypothesis, the *wh*-word *who* in (77) bears two Cases, A-Case and Op-Case. In the long distance *wh*-movement in (77), the *wh*-word must first move to the embedded CP Spec, which is a phase edge. Thus, the following structure is derived.[14)]

(78) [CP [DP *wh*-Case [NP A-Case]] [TP it is likely [TP tDP to win]]]

In (78), the fronted *wh*-phrase, being a complex structure, is already spelled out due to the fact that it constitutes a left branch and, therefore, its constituent parts, including A-Case, become inaccessible to the computational system. The derivation therefore crashes because the A-Case of the *wh*-word is unvalued and undeleted,

thereby explaining improper movement effects with super-raising.

As yet a further example of improper movement, consider :

(79) *who was tried [CP twho [twho to leave]]

As in (77), *who* in (79) passes through the embedded CP Spec on its way to Spec, TP. The derivation therefore crashes because, at the relevant derivational point, its A-Case becomes inaccessible to the computational system, yielding the effect that improper movement is disallowed.

As the attentive reader will have already noted, there are cases of improper movement that do not easily lend themselves to an analysis in terms of the Split Case Feature Hypothesis. One such case is given in (80).

(80) *John seems [CP tJohn that [TP it is likely [TP tJohn to win]]]

Here, *John* undergoes movement to the embedded Spec C position prior to undergoing raising to the matrix Spec T position. The prohibition against such improper movement is not derived by invoking the Split Case Feature Hypothesis : Assuming that the raised DP, being not a *wh*-word, does not consist of an operator and a variable, it emerges that at all levels of grammar, it may only bear one Case feature. Given this, I am forced to assume that the Case of *John* in the Spec of the embedded CP is accessible to the computational system at the stage where it should Agree with T. Hence, it seems that the illformedness of a derivation of the kind in (80) is not yet guaranteed by the Split Case Feature Hypothesis and related principles.

Clearly, an analysis that derives the case of improper movement in (80) by invoking the Split Case Feature Hypothesis, on a par with the construction in (77), suggests itself. And indeed, if one assumes that the construction in (80) involves topicalization because it is a phenomenon familiar in many languages, including English, that topics undergo movement to Spec, CP, the illformedness of (80) follows in the same way as that of the super-raising derivation in (77) due to the fact

that a topicalized DP, like a *wh*-phrase, bears two Case features, A-Case and Op-Case.[15)]

As another case in point, consider the following example :

(81) *John was tried [$_{CP}$ t$_{John}$ [t$_{John}$ to leave]]

Here, the embedded subject undergoes movement to the embedded Spec C position prior to undergoing raising to the matrix Spec T position. If *John* bears only one Case feature, we cannot appeal to the Split Case Feature Hypothesis to rule it out. Again, if the construction in (81) involves topicalization, the illformedness of (81) follows in the same way as that of the derivation in (79).

Quite a few issues of analysis and empirical prediction arise under the Case-theoretic approach to improper movement, but the details extend beyond my immediate concerns. I will have to be content here to have laid out the logic that derives the ban on improper movement.[16)]

6.5. *Wh*-movement and activation

Chomsky (2000) suggests that only phrases with uninterpretable features count as candidates for Agree. This "activation condition" is formulated as in (82).

(82) An uninterpretable feature activates the goal.

For the A-system, Chomsky takes Case to implement the activation condition in (82) : a DP can only Agree for ø-features if it contains an unchecked Case feature. A parallel feature, independent of Case, must render A-bar goals active for A-bar probes. If the Split Case Feature Hypothesis is correct, Op-Case would play a role in the derivation of A-bar movement almost identical to that played by Case features in A-movement derivations. In the system I am proposing, then, A-Case renders A goals active for A probes and Op-Case serves to mark an A-bar goal as active for an A-bar probe.

This proposal that an Op- Case feature renders A-bar goals active for A-bar

probes is not novel to this paper. Frank (2002) proposes a similar mechanism to handle wh-movement (I do not review Frank's argument here, just referring the reader to Frank (2002)).

6.6. A further Extension

I have argued that *wh*-operators, focus operators and topic operators bear an Op-Case feature. It generally agreed that strongly quantified DPs such as *everyone* are interpreted as generalized quantifiers and must undergo QR. I will assume that a strongly quantified DP, being quantificational, consists of an operator and a variable, like *wh*-phrases. If so, then quantified noun phrases are expected to bear two Cases, as in (83), given the Split Case Feature Hypothesis.

(83) [DP every Op-Case [NP one A-Case]]

A welcome consequence of this analysis is that it motivates QR. Despite a rich body of cross-linguistic evidence in favor of QR, the theoretical motivation for it is still far from clear. From the perspective of the Minimalist Program, movement without any feature checking is unmotivated. In the minimalist analysis, all movements must be triggered by the need to check morphological features. As some linguists (cf. Hornstein (1995)) have pointed out, however, it is hard to find what should motivate QR. The suggestion that quantified noun phrases bear an Op-Case feature as well as an A-Case feature offers a satisfactory solution to the triggering problem.

Take (84) for example.

(84) Dulles suspected everyone Angleton did [VP e]

Example (84) illustrates a case of ACD-resolving QR. In the proposed theory of Case, the strongly quantified DP containing the null VP has two structural Cases, as in (83). On the assumption that when selected by v, V is ø-complete, entering into Case-agreement structures (as stated in Chomsky (2001)), the A-Case of *everyone*

enters a relation of agreement with V and is valued in its base position, in the manner of objects. In the next step, then, the Op-Case of *everyone* enters a relation of A-bar Agreement with v, followed by movement of the object to the Spec of vP, thereby predicting correctly that sentences such as (84) with ACD structures are grammatical. Notice that in this derivation, the second movement step (QR) is triggered by an unchecked Case feature in essentially the same way as is the first movement step and, therefore, it is motivated.

If we treat strong determiners as operators of some sorts (Diesing, 1992), we predict that they have an Op-Case feature. The following examples seem to confirm this prediction.

(85) a. *What do you want to see the picture(s) of ?

b. *What do you want to see these pictures of ?

As is well-known, extraction out of a definite (85a) or a regular demonstrative (85b) is impossible. Why should these cases be ruled out ? Mahajan (1992) suggests that the cases in (85) should be ruled out as CED effects (extraction out of displaced elements). Mahajan's proposal is as follows : non-specific objects receive a structural Case under government by V ; specific objects receive Case in different ways ; in particular in the Spec of Agr-oP. In that non-θ-governed position, extraction out of specific objects is impossible, due to a CED violation. A theory adopting the idea that strong determiners such as *the* and *these* have an Op-Case feature allows for a more principled explanation than Mahajan's CED-approach, which is merely stipulative. In the proposed theory of Case, the object DP in (85) has two structural Cases. Its A-Case is checked by the embedded V in its base position. In the next step, then, the Op-Case of the object Agrees with the corresponding feature on the embedded v, followed by movement of the whole DP to the Spec of the embedded v. As we have seen, the fronted DP, being a complex structure, is already spelled out due to the fact that it constitutes a left branch and,

therefore, its constituent parts become inaccessible to the computational system, with the consequence that subextraction is not successful. As a consequence, examples like (85) are correctly predicted to be ungrammatical.

The scenario sketched above is highly speculative, of course, and obviously in need of a much more through empirical and theoretical evaluation, which is too involved a subject to be treated here in detail, tough.

7. Case Feature Combinations

As the attentive reader will have already noted, a question arises as to what Case feature combinations are licensed in the grammar. It is too involved a subject to be treated here in detail. But I feel that Case feature combinations are constrained, not only in the syntax, but also at PF.

Recall that in the new version of Case, two Case features are added to *wh*-items according to the activation condition in (82), as in (86).

(86) [DP Op-Case [NP A-Case]]

The Case feature of the N part will depend on which element in syntax licenses the NP that is headed by the N in question. The Case feature of the D part also will depend on what licenses the DP that is headed by the D in question. Thus the Case features in question may depend on what licenses them.

(87) Case features are valued based on what Agrees with them.

The principle in (87) determines what abstract Case feature combinations are attested.

In the case of long-distance *wh*-movement in Hungarian, the *wh*-subject originates in the embedded finite clause, where it receives nominative Case. En route to its surface position, it receives accusative Case from the matrix verb. In this way, we see why the Nom-Acc pattern is attested. Similarly, in the Quechua

case (72), the *wh*-word originates in the subject position of the embedded nominalized clause, where it receives genitive Case. En route to its surface position, it receives accusative Case from the matrix verb. In this way, we see why the Gen-Acc pattern is possible. The same story caries over to the other Case feature combinations.

One clarification is in order. It is well known that the connection between abstract Case as the means to license DPs/NPs and morphological Case as what we see on DPs/NPs can't be too close. We assume here that Case realization obeys a disjunctive hierarchy that is typical of morphological Sell-out, as discussed, e.g., in Halle (1991). The hierarchy is roughly that in (88).

(88) Case realization disjunctive hierarchy (Marantz (2000 : 24))

---lexically governed Case

---"dependent" Case (accusative and ergative)

---unmarked Case (environment-sensitive)

---default Case

Unmarked Case is what we call nominative and genitive. Putting aside many details, the hierarchy in (88) ensures that the more specific, more particular Case requirements win over the more general, less particular Case requirements. Lexically determined Case, for example, takes precedence over everything else because it is more marked than the other Cases.

In an example of long-distance *wh*-movement in Hungarian, which exhibits raising from nominative to accusative, accusative wins. This could be consistent with the hypothesis that the more marked Case wins. Lefebvre and Muysken (1988) observe that when raising from accusative to accusative takes place, accusative gets expressed ; when raising from oblique to oblique, oblique gets expressed (as we saw above in section 6.3). This also could be consistent with the hierarchy in (88), because the same Case is checked twice. But why only one

instance of accusative/oblique Case is possible? An answer to this question is already suggested in Kinyalolo (1991). He adopts a kind of morphological economy condition, which regulates Spell-out of the output of syntactic processes. It is obvious that using two accusative/oblique morphemes on a single DP is not economical. Finally, the Quechua genitive-accusative pair in (73) shows that in raising from genitive to accusative not only accusative but also genitive get expressed. The hierarchy in (88) does not explain why we have to express both genitive and accusative on the raised *wh*-word. There seem to be ways of making the pair follow from other morphological principles, but they involve an investigation of morphological case that would take us beyond the concerns of this paper.

We are entitled to wonder at this point why in long-distance *wh*-movement constructions in Hungarian, the Case of a raised accusative-marked constituent remains accusative, and the Case of a raised oblique-marked constituent remains oblique (this observation is due to Kiss (2002)). In the new version of Case, syntax allows for accusative plus accusative combinations, but morphological principles like the hierarchy in (88) choose to spell out only one accusative Case. In the case of a raised oblique-marked constituent, the *wh*-word originates in the embedded clause, where it receives oblique Case, and passes through an ECM position, where it receives accusative Case. Notice that although this combination is licensed in syntax, the latter gets expressed. The reason for this is that oblique, being a lexically determined Case, takes precedence over everything else. In this way, the preservation of oblique Case when a DP raises from a position governed by an oblique Case verb to an accusative Case-marked position follows.

Assuming the analysis offered above to be on the right track toward explaining what Case feature combinations are licensed in the grammar, the following question arises: why is multiple Case checking in Norwegian allowed just in case there is no

morphological conflict between the assigned Cases. In this language, like Hungarian, it is syntactically possible for a DP to have two Cases. However, the value of one Case must not be distinct from the value of the other Case. Like so many other morphological phenomena, morphological Case is preconditioned by many different factors. One of the factors is a Case realization disjunctive hierarchy. I speculate that Norwegian-type languages make use of different Case realization strategies, the study of which lies outside the scope of this paper. This is of course far from surprising—in view of the fact that languages differ widely with respect to their morphological systems.

8. Conclusion

In this article I have shown that A-bar agreement always reflects a relation where Case is relevant, like A-agreement. A welcome consequence of this analysis is that it is theoretically minimalist, because it does not invoke any configurational distinction between A-agreement and A-bar agreement. This proposal reduces the inventory of theoretical distinctions with no loss of empirical accountability.

NOTES

1) Georgopoulos (1991) describes a similar system in Palauan.

2) The Chamorro system is somewhat complex, with the form of *Wh*-agreement depending on the transitivity and mood (realis vs. irrealis) of the verb. The different overt realizations of *Wh*-agreement can be summarized as follows :

(i) Overt realization of *Wh*-Agreement

[Nom Case]	*-um-* when the [+V] predicate is realis and transitive
[Obj Case], [Obj2 Case]	(optional) nominalization, plus *-in-* when the [+V] predicate is transitive
[Obl Case]	nominalization, plus (optional) *-in-* when the [+V] predicate is unaccusative

(adopted from Chung 1998 ; 236-237)

But we must not forget that *Wh*-agreement occurs even when not overtly signaled by any special morphology.

3) Polinsky and Potsdam (2001) describes a similar system in Tsez, a language of the northeast Caucasus.

4) Bošković and Lasnik (2003) suggest that the reason why examples such as (24) is ungrammatical is that the trace of *who* in the embedded Spec, CP blocks affixation of the null C, resulting in a violation of the Stranded Affix Filter. This approach is not without problems, however. It is not clear to me why the trace of *wh*-movement in the embedded Spec, CP blocks affixation of the null C to the matrix verb. It is generally assumed that the intermediate trace of *wh*-movement does not block affixation of the null C, as suggested by the grammaticality of (i) below.

(i) Who does Christine think [$_{CP}$ t_{who} C [$_{TP}$ t_{who} bought that painting]]?

5) In the standard formulation of closeness, the class of potential interveners is restricted to those c-commanding the element to be attracted. In this article, I will follow this practice. But we must not forget that some scholars include dominance relations as well as c-command relations in the condition of being an intervener (Fukui, 1998).

6) In Uriagereka's system, the Linear Correspondence Axiom (LCA) in (i) is adopted.

(i) A lexical item α precedes a lexical item β iff α asymmetrically c-commands β.

In view of (i), the terminal elements in Spec, XP position in (38) can not be linealized with respect to the rest of the structure (i. e., YP), since the terminals in DP do not asymmetrically c-command those in YP. Assuming that a nonlinealized phrase marker is ill formed, the system is forced to spell out the DP in (38) before it merges with YP. See Uriagereka (1999) and Nunes and Uriagereka (2000) for discussion.

7) One might raise the question of why the A-Case of the *wh*-phrase in Hungarian sentences such as (i) shows up on the NP rather than on the *wh*-part.

(i) Melyik könyvet abarod, hogy megjelenjen ?
which book-ACC want-2SG that appears-SUB.3SG
'Which book do you want to appear ?'

I suggest that an explanation of example (i) follows if we assume that D-linked *wh*-phrases are headed by the null counterpart of the definite determiner (cf. Boeckx, 2003). On this view, then, the *wh*-phrase in (i) has the structure in (ii).

(ii) [$_{DP}$ D Op-Case [$_{NP}$ which book A-Case]]

Under the further assumption that they involve movement of an NP to the Spec of CP (cf. Boeckx, 2003), the *wh*-phrase in (i) has the structure in (iii).

(iii) [$_{DP}$ [$_{NP}$ which book A-Case] D Op-Case t_{NP}]]

I also assume that Case is an inflectional affix. Given this assumption, in order to have its inflectional features checked, the Op-Case marker must attach to *which book* in the morphological component, as the possessive marker attaches to *who* in the *whose car* example, creating [DP [NP which book A-Case Op-Case]]. This accounts for the fact that accusative Case shows up on the NP in sentences like (i).

8) One might point out that unlike object agreement in Innu-Aimûn, Hungarian type of *wh*-Case marking can be taken to be specifier-head. The reason for this is that unlike in Innu-Aimûn, the *wh*-word in Hungarian is moved into the matrix clause to create a spec-head configuration. In response to such criticism, I would like to point out that such a theory entails that there will be distinct types of agreement involving different syntactic relations, which is problematic for theories of agreement in the context of the Minimalist Program.

9) The question arises of how the assumption that extraction from a subject in the Spec of vP is possible can be incorporated into Uriagereka's (1999) system. To argue this point would carry us too far away from the purpose of this paper.

10) The kind of *wh*-Case marking under consideration is found in Inbabura Quechua. Thus we have :

(i) a. pi-ta-taj$_i$ kri-ngi [t$_i$ wañu-shka-ta]
who-acc-wh qu believe-pr2 die-Nom-acc
'Who do you believe died ?'

b. pi-ta-taj$_i$ muna-ngi [t$_i$ shamu-chun]?
who-acc-wh qu want-pr2 come-finite
'Who do you want to come ?'

In the a and b sentences the complement is finite (cf. Hermon, 1985). In (ia) the *wh*-word *pi-ta-taj* originates in the subject position of the finite object complement, where it receives morphologically unrealized nominative Case. En route to its surface position, it receives accusative Case from the matrix verb *kri-ngi*. Notice that, morphologically, this second Case appears on the *wh*-word. Similarly, in (ib), the *wh*-word *pi-ta-taj* extracted from the embedded subject position assumes accusative Case in the course of the derivation. The explanation for the Quechua cases (ia-b) is the same as for Hungarian. (Abbreviations used in glossing Inbabua Quechua are as follows : acc=accusative ; Nom=noiminalizer ; pr2=second person present tense ; wh qu=WH-question marker.)

11) One might suggest that *Wh*-agreement in Kinande might be taken to be specifier-head. However, there is reason to believe that the complementizer in Kinande agrees with the *wh*-phrase in Spec, vP (Carstens, 2005).

12) One might note that if topics and focused elements have the same split-Case system as *wh*-items, a question arises about why there is no partial movement with these elements. For the

proposal here, the split is possible only if the Op Case feature has phonological content. It may be that focused or topicalized elements do not meet such requirement.

13) Abbreviations used in glossing Cuzco Quechua are as follows : GE=genitive ; AC=accusative ; AF=affirmative ; 2=second person : CIS=cislocative ; NOM=nominative ; 3=third person.

14) According to Chomsky's theory of movement, the subject *who* must move to the Spec of the most deeply embedded T due to the EPP requirement of T. Under this assumption, as we observed above, the A-Case of *who* in the Spec of the lowest T is not accessible to the computational system, because Spell-out must apply to the DP before it merges with T. The derivation therefore crashes in the lowest clause, explaining improper movement effects with super-raising. However, Bošković (2002) argues that in a number of infinitives the EPP does not hold at all. For this reason, I leave the derivation untouched.

15) Demirdach (1997) assumes that English DPs are quantificational and consequently are subject to quantifier raising (QR). As a result, Condition C effects are analyzed as strong crossover violations, as shown in (i).

(i) *Oscar$_i$ [know he$_i$ loves t$_i$]

If this is so, then in the case of example (80) the subject of the most deeply embedded clause *John*, being quantificational, bears two Case features, like *wh*-phrases. The derivation therefore crashes because, at the relevant derivational point, there is no element with A-Case that can Agree with T. As a consequence, the sentence is correctly predicted to be ungrammatical.

There is a serious problem with this analysis, however : as Demirdache notes, it is not the case that all English DPs are quantificational. A way out of this dilemma would be to assume that in the cases where the relevant DP is not quantificational, A-Case is generated in the N-position at all levels of grammar for reasons that are unclear to me, with the result that at the relevant derivational point, it becomes inaccessible to the computational system.

16) A question arises as to how we should treat a sentence like (i) under the proposal made here.

(i) Who seems to know the answer ?

It is generally assumed that the *wh*-word in (i) passes (more precisely, must pass) through the intermediate [Spec, TP] as a result of successive cyclicity. The derivation therefore crashes because, at the relevant derivational point, its A-Case becomes inaccessible to the computational system. Consequently, example (i) with *who* is predicted to be ungrammatical, contrary to fact. We therefore confront a puzzle : why is example (i) with *who* is grammatical.

We can deal with this puzzle by assuming, following a suggestion attributed to Bošković (2002) and Takahashi (1994), that successive cyclic movement is not a result of Agree. Rather, it is a reflex of the requirement that all chain links be as short as possible. If this is true, the subject *who* in (i) can remain in its base position at the point that its A-Case must enter a checking relation with the corresponding feature of the matrix T, as in (ii).

(ii) [T seems to [vP who know the answer]]

In (ii), remote agreement takes place directly between the matrix T and the A-Case-bearing part of the *wh*-phrase. Recall from section 5. 1 that the constituent parts of an unraised subject phrase are accessible to further computation. Then the whole *wh*-phrase moves to the Spec of the matrix T through the Spec of the embedded T due to the requirement that all chain links be as short as possible. Thus, no problem arises for this case with respect to A-Case feature checking, accounting for the grammaticality of (i).

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